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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/760,397

01/21/2004

Helmut-Preisach

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EXAMINER

VAN ROY, TOD THOMAS

ART UNIT

PAPER NUMBER

2828

MAIL DATE

DELIVERY MODE

05/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/760,397

Applicant(s)

PREISACH, HELMUT

Examiner

Tod T. Van Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

The examiner acknowledges the amending of claims 1-11.

*The examiner notes that the applicant has amended claim 11 in the currently filed claims, while the most recent Remarks refers to claim 11 being cancelled.*

*Appropriate action is required.*

### ***Claim Rejections - 35 USC § 112***

The previous 112 rejection of claim 11 is withdrawn.

### ***Response to Arguments***

Applicant's arguments filed 02/13/2007 have been fully considered but they are not persuasive.

The applicant has argued that both terminals of the differential amplifier are AC coupled as both of capacitors C1/C2 are in series with the laser diode.

The examiner does not agree. Figure 3 shows each end of the differential driving stage is connected in *parallel* to either end of the laser diode. The capacitors, C1/C2, and the active compensation circuits form the parallel connections. One path, AC coupled, can be thought of as being through L2 to C2 and on to the laser diode, much like the A2 path of the applicant's fig.2. The DC path can be thought of as being through L1 and through the active compensation circuit, much like the A1 path of the

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applicant's fig.2. In addition, fig.1, and [0029-30], describe the C1/C2 capacitors of fig.3 as being high pass (AC), while the R2/C2 components found in the active compensation circuit form a low pass route (DC). As each end of the differential driving circuit can be thought of as having a DC or an AC path, the rejection over Schrodinger is believed to be valid.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 7, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Schrodinger et al. (US 2005/0025201)).

With respect to claims 1 and 7, Schrodinger discloses a circuit for driving a semiconductor laser comprising a differential amplifier (fig.3 formed of #T1 and T2) for driving a semiconductor laser directly, a first output of the differential amplifier being direct current coupled to a first terminal of the semiconductor laser (fig.3, anode DC coupled through L1) and a second output of the differential amplifier being alternating current coupled to a second terminal of the semiconductor laser (fig.3 cathode alternating current coupled through capacitor C2).

With respect to claim 2, Schrodinger further discloses the second output of the differential amplifier is connected to the second terminal of the semiconductor laser by means of a capacitor, a coil and as resistor connected in series to ground between the capacitor and the second terminal (fig.5, R2 and L2 in series to ground between C2 and the laser diode).

With respect to claim 11, Schrodinger discloses the circuit outlined in the rejection to claim 1, including differential driving operation when an AC signal is applied, and single ended when a DC signal is applied (as all claimed circuit components and characteristics have been disclosed by Schrodinger, operation of the circuit in either AC or DC conditions would inherently result in the given outputs).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schrodinger et al.

With respect to claim 8, Schrodinger teaches the circuit and semiconductor laser are disposed on spatially separated integrated circuits (fig.6, implying diode is on separate chip). Schrodinger does not teach impedance matched lines of the circuit being provided for connecting the semiconductor laser to the circuit. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the circuit of Schrodinger with impedance matched lines in order to reduce parasitics present in the driving circuit, as is well known and widely practiced in the art.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schrodinger in view of Mukherjee (US 6226322).

With respect to claim 3, Schrodinger teaches the driving circuit as outlined in the rejection to claim 1, but does not teach the use of variable resistors connected in parallel with the resistors of the differential amplifier. Mukherjee teaches a communications circuit in which parallel variable resistors are used with differential amplifiers (fig.15 Rf). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit of Schrodinger with the resistors of Mukherjee in order to balance the amplifier gain as need for proper output (Mukherjee, col.28 lines 42-50).

Claims 5-6, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrodinger in view of Giles (US 4612671).

With respect to claim 5, Schrodinger teaches the driving circuit as outlined in the rejection to claim 1, including the current inputs (fig.3 I1 and I2) but does not teach the use of analog to digital converters. Giles teaches a laser driving circuit that uses A/D converters (fig.1) at the inputs of the differential amplifier. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit, with current control, with the D/A converters of Giles in order to make the amplifier and current source controllable from an outside controlling chip (Giles, abs.).

With respect to claim 6, Schrodinger and Giles teach the driving circuit outlined in the rejection to claim 5, and Giles additionally teaches the use of a microprocessor for executing a program to drive the circuit (Giles, abs.). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the driving circuit of Schrodinger and Giles with the microprocessor of Giles in order to execute various programmable methods for controlling the laser diode.

With respect to claims 9-10, Schrodinger teaches the driving circuit outlined in the rejection to claim 1, but does not teach a method of controlling the laser under specified events. Giles teaches a laser driving circuit which controls the laser diode by: the circuit measuring characteristic curve data, determining a starting value from the data, the data being determined by varying the start up value as a function of a desired characteristic quantity of the laser (col.3 lines 15-30); and teaches performing the method on a periodic basis to monitor for faults (col.3 lines 59-65). It would have been

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obvious to one of ordinary skill in the art at the time of the invention to combine the laser driving circuit of Schrodinger with the controlling methods of Giles in order to provide for routine maintenance checks of the diode, and to add a degree of automation to the system.

### ***Allowable Subject Matter***

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 4 is believed to be allowable based on the fact that a differential amplifying laser driver circuit having the specified coupling inputs, as well as the claimed coil, resistor, ground placement (between the laser terminal and capacitor), and additionally the further series connection of a coil, two diodes and a resistor placed specifically between the second output of the differential amplifier and the capacitor, was not found to be obvious over the prior art.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

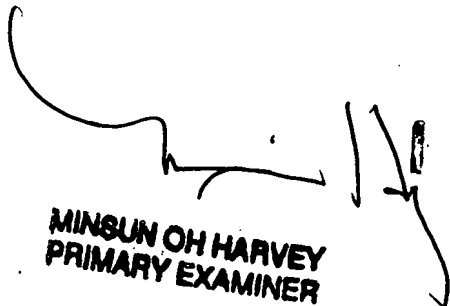
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**MINSUN OH HARVEY  
PRIMARY EXAMINER**